ABSTRACT OF THE DISCLOSURE

RRP genes are identified as modulators of the p53 or p21 pathway, and thus are therapeutic targets for disorders associated with defective p53 or p21 function. Methods for identifying modulators of p53 or p21, comprising screening for agents that modulate the activity of RRP are provided. Modulating agents identified using the methods of the invention can be used to specifically inhibit growth of tumor cells that overexpress an RRP protein. mRRP1 knockout mice are also provided.